

UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

FACILITATIVE INFLUENCES ON ORGANIZATIONAL PLANNING

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

Degree of

DOCTOR OF PHILOSOPHY

By

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Norman, Oklahoma

2015

FACILITATIVE INFLUENCES ON ORGANIZATIONAL PLANNING

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF PSYCHOLOGY

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Dedicated to the people who matter; you probably don't even know who you are.

Acknowledgements

I would like to thank my dissertation committee and my undergraduate research assistants for their contributions to the present effort. I would also like to thank Logan Steele, Logan Watts, and Brett Torrance for their commitment and dedication to this project.

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Abstract

Planning is one of the most important aspects of performance in organizations. The present study investigates a number of facilitative influences on organizational planning, including the threat of external pressure in the form of competition, timeframe, and workload. Results indicate that external competition has a strong effect on planning performance, with heavier competition resulting in better planning. Timeframe also appears to influence individuals' ability to succeed in the planning process. Workload does not have much effect on their own, but contribute to unique interactions. Implications of these findings are discussed.

Introduction

Planning is one of many factors held to be critical to performance in organizations. Though the value of planning has often been debated, from Kahneman and Tversky's (1977) stance that planning is inherently associated with biases and thus leads to errors, to Mintzberg's (1987) notion that setting a concrete path is doomed to lead to failure, the contemporary standing is that planning is not only valuable, but critical to the success of organizations at various levels (Jacobs & Jaques, 1986; Mumford, Schultz, & Osburn, 2002; Miller & Cardinal, 1994). Once thought to be relatively static (Xiao, Milgram, & Doyle, 1997), planning is actually a complex, dynamic process, with a number of influencing factors and models pertaining to its real-world function.

Definitions and Models of Planning

To understand the complexity of planning, it helps to conceptualize what we mean when we discuss "planning," especially within the context of organizations. The study of planning within the field of psychology has traditionally been defined in terms of its cognitive aspects, such as how people recognize elements of a problem, create plans, formulate backup plans for those plans (Dörner & Schaub, 1994; Giorgini & Mumford, 2013), and execute those plans (Caughron & Mumford, 2006). In keeping with this approach, planning is considered to be the process of mentally simulating future actions necessary to attain some sort of goal (Berger, Karol, & Jordan, 1989; Simons & Galotti, 1992; Patalano & Seifert, 1997; Osburn & Mumford, 2006). McDermott (1978), on the other hand, emphasized not the goal-setting aspects of

planning, but rather the process of solving a problem via identification and organization of subtasks.

Continuing with the theme that planning is a cognitive process, Hayes-Roth and Hayes-Roth (1979) proposed a cognitive model of planning. This model takes into account both the goal-setting and execution of a plan in order to solve a problem. An important aspect of the cognitive model is that it emphasizes time as a dimension. Specifically, this model posits that people are opportunistic with their planning and at various points in the development of their plan, they make observations that allow for adjustments of said plan. Equally important as this fundamental understanding that planning is a cognitive process, is the identification of cognitive capacities relevant to planning. Berger, Guilford, & Christensen (1957) developed a battery that was tested on 364 Air Force enlistees which identified six factors relevant to planning: judgment, conceptual foresight, perceptual foresight, ordering, elaboration, and adaptive flexibility. More recent literature on planning lends some support for the pertinence of these factors to planning (Robertson & Black, 1986; Franklin & Bower, 1988). Additionally, Mumford, Schultz, and Van Doorn (2001) identified a number of cognitive processes pertaining to planning, such as environmental monitoring, goal identification, plan refinement, plan re-evaluation, and forecasting. This notion of plan refinement, or flexibility and adaptability, has been demonstrated to be of particular importance (Keane, 1996). Specifically, it appears as though people tasked with solving a problem tend to focus on adaptation rather than pragmatic outcomes (Mumford, Schultz, & Van Doorn, 2001). Understanding what planning is and what it entails points to why planning is so important to the success of organizations.

Planning and Performance

Planning is important in organizations primarily because of its impact on performance (Miller & Cardinal, 1994; 2015). Directly, planning activities allow organizations to act in a timely fashion and ensure that essential resources are available (Gaerling, 1994; Liberman & Trope, 1998). Additionally, planning allows individuals to recognize and identify opportunities as well as adjust to new developments (Jaudas & Gollwitzer, 2004). Perhaps the effect of planning on organizations can be better illustrated with a real-world example. In the early 1990s, an organizational transformation at IBM occurred with the primary goal of changing the culture and increasing performance (Saari, 2013). As part of the change effort under new leadership, employees were given a number of goals to meet, starting with the definition and communication of eight principles for the company, in addition to a feedback system featuring eleven new requirements of leaders. These changes led to befuddlement amongst employees, as they claimed to be confused with so much new information to focus on. To ameliorate the problem, employees were given instruction to develop individual, task-specific plans as a method of attaining their goals. The approach worked and IBM developed into the successful corporation as we know it today (Latham & Arshoff, 2015). This is just one example of how planning can help facilitate the success of organizational change.

Planning is fundamental to success through various organizational levels (Armstrong, 1982). Specifically, people need to plan how they will allocate their time to various aspects of their jobs, groups need to plan how to divide work among the group members, and organizations need to plan how they will respond to competitor actions

and changes in technology. Planning of business strategy, marketing, risk mitigation, and project development is performed by individuals and groups in order to facilitate the identification and prioritization of goals and other key work activities, analyze the cost and benefits of these activities, and ensure the availability of requisite resources needed to perform them (Connelly & Johnson, 2015; Mumford, Schultz, & Osburn, 2002). Savage, Marlow, and Salas (2015) further elaborate upon the influences of planning at multiple levels of an organization. Taking an applied approach, they argue that companies must understand the planning process in order to utilize it effectively to improve performance. At the individual level, a number of variables influence the effectiveness of planning on performance, including level of commitment (Diefendorff & Lord, 2003), relationship with leaders within the organizations (Marta, Leritz, & Mumford, 2005), intelligence (Devine & Philips, 2001; Novicevic, Harvey, Autry, & Bond, 2004), and, not surprisingly, general planning skill (Mintzberg, 1987). At a different level, teams that plan appropriately demonstrate increased performance (Woolley, Gerbasi Chabris, Kosslyn, & Hackman, 2008) through improvements in communication and conflict management (Marks, Mathieu, & Zaccaro, 2001). When organizations implement clear, adaptable plans, downstream enhancements in performance occur in the manifestation of less conflict at the team level and lower turnover rate at the individual level (Donald et al., 2005).

Finally, planning is useful to organizations through its facilitation of creative efforts. Creativity and innovation allow organizations to understand the implications of new technologies, cope more effectively with environmental change, and formulate stronger business strategies (Ghiselin, 1963; Vandervert, Schimpf & Liu, 2007).

Continuing changes in markets, technology, and competition have made investment in innovation an organizational priority (Dess & Picken, 2000; Mumford, Scott, Gaddis, & Strange, 2002). In fact, studies have shown that innovation rate is directly related to profitability and corporate performance (Geroski, Machin, and Van Reenan, 1993). This appears to be especially true in high-technology firms, where the rate of product flow is crucial to firm performance (Eisenhardt & Tabrizi, 1995). Planning allows for the refining and reshaping of new ideas to facilitate their successful development (Osburn & Mumford, 2006). Hunter, Cushenbery, and Friedrich (2012) have argued that due to the complex, ambiguous, dynamic nature of innovation, some form of planning is in fact necessary. Specifically, these researchers argue, planning serves as a useful and crucial starting point for beginning a difficult task.

Situational Influences on Planning

As is the case with most complex processes, planning is influenced by a number of variables. Touched upon briefly earlier, goal-setting is one of the more obvious factors influencing planning and planning performance. Put simply: goals lead to plans. Locke and Latham (1990) have noted that individuals who set more difficult and specific goals tend to produce better plans and perform at a higher level. On the inverse, plans that do not feature goal setting tend to be ineffective (Bandura & Simon, 1977). In that study, it was found that plans have negligible influence when specific goals are not set in place to implement them.

In their meta-analysis on the value of strategy planning and firm success, Miller and Cardinal (1994) outlined a number of contingency variables believed to influence strategic planning. First, it was found that because larger firms are more complex, with

multiple levels and managers needing to be integrated and controlled, that their performance would hinge more strongly on strategic planning than in small firms. Another variable found to influence planning in organizations is capital intensity, with planning being more crucial to capital-intensive firms due to the necessity of long-term resource investment and management. Finally, Miller and Cardinal found that when firms faced a more turbulent environment, strategic planning more strongly affected performance.

Mumford, Mecca, and Watts (2015) explored some of the more common factors found to influence planning. The viability and quality of prepared backup plans, for example, have been demonstrated to influence overall planning performance (Giorgini & Mumford, 2013). Mumford, Schultz, and Van Doorn (2001) discussed some key individual (e.g. case-based knowledge, domain-specific skills, expertise) and situational (e.g. time, environmental stability, workload) shown to have an influence on successful planning.

Competition

While some factors have been shown to influence planning, the complexity of planning as a process warrants further investigation. Planning is a cognitively demanding, resource-intensive process (Mumford, Schultz, & Van Doorn, 2001). Along similar lines, human capacity to deal with such complexity is limited (Jacobs & Jaques, 1987), and planning offers a solution through corporate mechanisms and processes that help supplement this individual (in)capability. Given the complexity of planning, individuals may not deem the process as worthy of their investment. Thus, it may be

beneficial if there are external pressures applied (Ackoff, 1981; Miller & Cardinal, 1994).

One type of external pressure that may contribute to an individual's willingness to invest in a complex planning process is competition from an external source. Ahn (2002) has demonstrated that competition enhances productivity. Similarly, Chong and Rundus (2004) found that degree of market competition is positively related to organizational performance. Similarly, people appear more willing to invest in complex processes such as planning, when there is external motivation to do so (Mumford, Schultz, & Osburn). These foregoing observations point to the first hypothesis of our study:

Hypothesis 1: Individuals exposed to external competition will demonstrate more willingness to invest in the planning process and formulate plans of greater quality, originality, and elegance.

Timeframe

Mumford, Schultz, and Van Doorn (2001) have argued that time considerations represent a complex effect on planning. Gaerling (1994) noted that people are more likely to consider more aspects of efficiency when timeframe was removed from the task at hand. Jacobs and Jaques (1987) note that most research on leader planning has not been conducted in a long timeframe, and thus cause and effect linkages have not been established, for the most part. In fact, timeframe and time pressure, for the most part, have been discussed in terms of leader forecasting (Shipman, Byrne, & Mumford, 2010; Kotter, 1982). Jacobs and Jaques (1987) have pointed to the importance of

various timeframes to the performance of multiple levels of an organization. Specifically, they argue that ultimately the role of leadership is to strike a balance between short- and long-term goals, with each being emphasized at different levels of the organizations. Within higher levels of the organizations, adaptation to changing environments is more proactive and thus needs to be envisioned over longer timeframes. Put in term of numbers, the researchers propose that decisions at the organizational level typically deal with timeframes of three to seven years, while timeframes for those in the executive and systems level extend beyond ten years. Ultimately, the pressure of time appears to be important to planning in that it relates to the level of work or responsibility a person feels obligated to fulfill. Thus, it seems plausible that if given a longer timeframe to develop a plan, an individual may feel more responsibility to develop a plan of high viability and invest in that plan.

Hypothesis 2: Planning performance will improve when individuals are given a longer timeframe within which to execute their plans.

Workload

There seems to be a public misconception that more demands placed on an individual will cause more pressure, and inhibit their ability to plan successfully (Dean, Kaelbling, Kirman, & Nicholson, 1994; Mumford, Schultz, & Van Doorn, 2001). Given the complexity of planning, it is a fair assumption that a higher workload, or more task demands placed upon an individual, would add to the complexity of the process. The research on task complexity and plan effectiveness is relatively inconclusive. On one hand, when complexity of a planning task increases, effectiveness of plan execution has been found to decrease along with identification of critical causes (Berger, Karol, &

Jordan, 1989). However, despite the apparent incremental difficulty task complexity adds to the planning process, it appears these more difficult conditions induce more investment and more effective execution of planning processes (Gardner & Rogoff, 1990; O'Hara & Payne, 1998). Thus, adding task demands, or more workload, to the planning process appears to complicate the process, which leads to our third hypothesis.

Hypothesis 3: Workload will add to the complexity of the planning process, likely being of more importance when individuals are under more external pressure.

Plan Attributes and Plan Performance

Lebedev (1991) developed a taxonomy of planning attributes based largely on the motivational and cognitive determinants of individual planning identified by Kreitler and Kreitler (1987). Lebedev identified five characteristics of managerial planning: 1) feasibility, 2) rationality, 3) flexibility, 4) detailedness, and 5) depth. Lebedev wrote of these five concepts as being psychological properties underlying planning. Feasibility refers to a plan's adherence to objective reality. A feasible plan enables the planner to determine what goals are attainable and realistic. Rationality refers to a goal that achieves its goal in the shortest amount of time. A rational plan is efficient and economical. Flexibility refers to alternatives made in addition to a primary plan. It allows for resorting to additional means and quick decision making. Detailedness refers to the actual content of the work – the number of steps involved in the execution of the plan. Finally, depth of planning involves the number of outcomes associated with a particular series of plans. Given the intent and nature of these plan attributes, it is likely that plans that are high in feasibility, rationality, flexibility,

detailedness, and depth will lead to plans that perform better. Thus, our fourth hypothesis

Hypothesis 4: The planning attributes of feasibility, rationality, flexibility, detailedness, and depth influence the overall quality, originality, and elegance of plans.

Method

Sample

The sample used to test these hypotheses was drawn from a large southwestern university. The 89 men and 88 women, 178 participants in all (one participant declined to mention gender), who agreed to participate in this study were recruited from undergraduate business and management courses providing extra credit for their participation in experimental studies. In classes providing extra credit for participation in experiments, the experimenter attended lecture and gave a brief, 5-minute summary of the study, as well as what participation would entail, to the students in the class. Students were then contacted via email with a brief, one paragraph description of the study, along with a number of available time slots during which they may sign up to participate in the study. The average age of the participants who agreed to participate in the present investigation was 22.00 years. Their academic ability, as indicated by scores on the Academic Achievement Test, lay roughly a quarter of a standard deviation above the national norms for freshman entering four-year institutions. These demographic characteristics are typical of the population taking upper division management courses.

General Procedures

Participants were recruited to take part in a study purporting to be examining complex problem solving in a management setting to minimize demand characteristics. During the first 20 minutes of this two-hour study, participants were asked to complete a set of timed covariate, control measures. During the next hour they worked on the experimental task. During the last half hour participants were asked to work on a set of untimed covariate control measures.

The experimental task participants were asked to work on was a business restructuring problem. This business restructuring problem was complex, novel, and ill-defined and therefore solutions were expected to require creative thought (Mumford & Gustafson, 2012). First, however, participants were asked to work through another scenario in which they assume the role of a principal of a secondary school which had been selected to participate in an experimental program intended to improve test performance in a variety of academic subjects. Participants were asked to write a two-to three-page plan that they would execute as principal of this school to improve test performance. This initial plan was meant to serve as a baseline planning task for participants and was scored for performance according to quality, originality, and elegance (Besimer & O'Quin, 1999).

Next, participants read through a brief, one-page instructional guide on successful planning. This instruction was intended to teach, or train, participants on the important aspects of planning and how to appropriately plan, to ensure that all participants were able to complete the final, experimental task correctly. The training on successful planning instructs participants on five key processes that have been shown to

contribute to effective planning. First, participants reviewed a small section demonstrating the importance of forecasting to effective planning (Patalano & Seifert, 1997; Byrne, Shipman, & Mumford, 2010; Shipman, Byrne, & Mumford, 2010). This included statements, in bulleted form, such as “When preparing a plan, it may be beneficial to attempt to predict how implementation will occur.” The next section provided the merits of goal setting to the planning process (Marcy & Mumford, 2007, 2010; Strange & Mumford, 2005; Smith, Locke, & Barry, 1990). This section included statements such as, “When preparing a plan, it is important to always keep in mind the demands of the task” and “Keep the goal in focus throughout the planning process.” A section on the importance of constraints and contingencies with regard to effective planning (Gaerling, 1994; Caughron & Mumford, 2008; & Isenberg, 1996) included statements such as, “It is important to consider factors that may impede your plan” and “One should identify key contingencies and key constraints, and adjust the plan accordingly.” Next, participants were informed of the role of errors and error management in effective planning (Dörner & Schaub, 1994, Mumford, Schultz, & Van Doorn, 2001; Dailey & Mumford, 2006; Licuanan, Dailey, & Mumford, 2007). This section included statements such as, “A planner who anticipates errors is better prepared to overcome them” and “Backup plans are a valuable tool when creating any plan.” Finally, the instructional page ends with the necessity to consider resources when planning (Howell & Boeis, 2004; Dean & Sharfman, 1996; Weber & Perkins, 1992). Comparisons of means of quality, originality, and elegance for both the experimental school and furniture company solutions showed that the planning instruction did appear to slightly improve performance, as shown in Table 1.

After the baseline task of preparing the plan for a secondary school and reviewing the one-page training on successful planning, participants were asked to work on a business restructuring problem, which served as the experimental task. This business restructuring problem, drawn from Marta, Leritz, and Mumford (2005) described an old, established, furniture manufacturer which had encountered problems in innovation, work processes, corporate organization, employee morale, and competitors' actions (e.g. opening retail stores as well as manufacturing furniture). These problems had resulted in falling profits and process inefficiencies in the company. Participants were asked to assume the role of a consultant and formulate a written plan which would help improve the performance and profitability of the firm. Manipulations of competition, timeframe, and constraints were embedded within this scenario. These written plans were evaluated for quality, originality, and elegance, as well as the planning attributes feasibility, flexibility, detail, depth, and rationality (Kreitler & Kreitler, 1987; Lebedev, 1991).

After constructing their final plan for the West and Burns Furniture Company, participants completed a manipulation check to ensure the manipulations were having the desired effect. Three questions were asked – one for each manipulation – on a 1 to 5 Likert scale. To check for recognition of competition, participants were asked “To what extent did you feel pressure from competition?” To check for recognition of timeframe, participants were asked, “How did you feel about the timeframe in which you were asked to complete the task? That is, how much time pressure was placed upon you in the scenario to develop a successful plan?” Finally, to check for recognition of

workload, participants were asked “How extensive were the demands placed on you in order to successfully complete the task?”

Covariates

Because of findings concerning critical determinants of performance on creative problem-solving tasks (Vincent, Decker, and Mumford, 2002), participants were asked to complete measures of intelligence and divergent thinking. The intelligence measure participants were asked to complete was the Employee Aptitude Survey. This verbal reasoning test produces retest reliabilities above .80. Evidence for the construct and criterion-related validity of this test as a measure of intelligence has been provided by Ruch and Ruch (1980).

The measure of divergent thinking skills participants were asked to complete was Christensen, Merrifield, and Guilford’s (1953) consequences measure. On the consequences measure, participants are presented with five unlikely events (e.g. what would be the results if suddenly no one could use their arms or hands?). They are asked to come up with as many consequences of these events as they can conjure. When scored for the number of responses generated, this measure typically yields internal consistency coefficients in the .70s. Evidence for the construct validity of this measure has been provided by Vincent, Decker, and Mumford (2002) and Merrifield, Guilford, Christensen and Frick (1962).

Because the current study was based on the creation of plans, a measure of planning skills was also given to participants. This measure was drawn from Marta, Leritz, and Mumford (2005). On this measure, participants are presented with a series of one-paragraph business planning problems. Subsequently, they are presented with five

questions pertaining to the problem (e.g. what were some of the key causes that led Sharp Tool Company to make the bad investment?). They are presented with 8 to 12 potential response options to these questions and asked to pick the best three or four, depending on the question. Responses are scored to reflect identification of key causes, identification of restrictions, identification of downstream consequences, use of opportunistic implementation strategies, and environmental scanning. When scored for overall, cross-dimension planning skill, this measure yields internal consistency coefficients in the .70s. Evidence of validity of this measure has been provided by Marta, Leritz, and Mumford (2005).

In addition to these cognitive measures, participants also completed Cacioppo and Petty's (1982) need for cognition scale. This measure was used to provide an assessment of motivation to work on tasks deemed cognitively demanding. This measure presents eighteen behavioral statements such as "I prefer simple to complex problems" or "Thinking is not my idea of fun." Participants are asked to indicate on a 5-point scale the extent to which they agree with these statements in describing themselves. The need for cognition scale produces internal consistency coefficients above .80. Evidence supporting the construct validity of this measure and its relevance to creative problem solving has been provided by Gibson and Mumford (2012) and Cacioppo and Petty (1982).

Given the manipulation of competition within the experimental task, participants also completed Ryckman, Hammer, Kaczor, and Gold's (1990) Hypercompetitive Attitude Scale. This measure was used to provide an assessment of hypercompetitiveness, or individuals' need to compete and win at any cost across

myriad situations. The measure presents 26 statements such as “I compete with others even if they are not competing with me” or “People who quit during competition are weak.” Participants are asked to indicate on a 5-point scale the extent to which the statements are true of themselves. The Hypercompetitive Attitude Scale produces internal consistency coefficients above .90. Evidence bearing on the construct validity of this measure has been provided by Ryckman et al. (1990).

Finally, participants were asked to complete a measure intended to provide an assessment of personality. Here, participants were asked to complete Goldberg’s (1992) adjective checklist. This inventory presents 100 adjectives (e.g. bold, distrustful, relaxed) where people are asked to rate on a 9-point scale how accurate this adjective is in describing themselves. Item responses are scaled to measure openness, conscientiousness, extraversion, agreeableness, and neuroticism, yielding internal consistency coefficients above .80. Studies by Goldberg (1992) and Marcy and Mumford (2007) have provided evidence for the construct validity of the measures of openness, conscientiousness, extraversion, agreeableness, and neuroticism provided by this measure.

Experimental Task

As noted earlier, the basis for the present study was production of a plan for business restructuring. These plans were to be based on the scenario presented in Figure One. Prior to starting work on their plans, participants were asked to read through this scenario which provided a description of the West and Burns Furniture Company.

The West and Burns Furniture company was described as a 70 year old firm that produced furniture. During its early years the firm had established itself by producing

furniture of high quality. In recent years, however, the quality of the furniture produced by the company had declined along with customer service. The company was described as employing 3,000 individuals working in a number of departments. The production setting was described as cluttered where workers were expected to share tools and equipment. It was noted that the firm had in recent years failed to keep pace with competitors in the development of innovative new products. Furthermore, unlike competitors, West and Burns had not opened up retail outlets. Pilot studies indicated that participants understood these key elements in the description of the company. In the next section of the scenario, it was noted the firm's owners had visited the production facility of a competitor. This site visit was the impetus for considering business restructuring. In the description of the site visit it was noted that the competitor's production facility was orderly, clean, and provided adequate workspace. The competitor's assembly line was exceptionally efficient. Moreover, employees were found to display high morale. Statements regarding competition, timeframe, and workload were embedded at the end of the scenario to act as manipulations.

After participants had read through this material, they turned to a new page in their workbook. Here, they were presented with the following statement: "Formulate a plan to help the West and Burns Furniture Company turn the organization around and improve profitability." Participants were asked to provide a two- to three-page plan to answer this question.

Manipulations

After participants had prepared plans for the initial scenario and reviewed the brief planning training, the manipulations occurred. Manipulations were embedded in

the second scenario, in which participants were asked to formulate a plan for turning around the West and Burns Furniture Company. In all, participants might be exposed to high or low conditions of three variables: 1) competition, 2) timeframe, and 3) timeframe.

With regard to competition, a statement involving either competition or working alone was embedded in the scenario. Those who received the high competition condition read the following statement in the scenario, “The owners have brought in a number of consultants, including your team, to pitch a plan to turn around their company. The competing consulting teams are considered to be some of the best in the business. The owners will adopt the plan deemed most successful to succeed.” Those in the low competition condition, on the other hand, viewed the statement, “To save on costs, your team is the only consulting team being considered for the task of developing a plan to turn around their company.”

With regard to timeframe, embedded in the scenario was a description of the timeframe within which the plan must be executed. Those in the short timeframe competition were given three months, while participants in the long timeframe condition were given 2 years within which to execute their plan for turning around the West and Burns Furniture Company.

Finally, the final manipulation involved the number and extensiveness of the desired outcomes expected from the plan, also embedded into the scenario. These demands represented workload placed upon the individuals. Those in the high workload condition were given seven expected outcomes of the plan (i.e.. improved market perception, profitability, quality assurance, customer satisfaction, employee satisfaction,

efficiency, workplace conditions). Those in the low workload condition were given three expected outcomes of the plan (e.g. improved market perception, profitability, efficiency).

Dependent Variables

Plan Attributes. For the experimental task, participants were tasked with developing a plan, a solution, to turn around a failing furniture company. Participants' responses to this scenario were appraised according to Lebedev's (1991) taxonomy describing key elements of viable plans. The taxonomy holds that viable plans evidence 1) feasibility, 2) flexibility, 3) detail, 4) depth, and 5) rationality. Although other attributes of plans exist, for example coherence, this taxonomy of plan attributes appears to provide a reasonably comprehensive description of key, behaviorally manifest, attributes of viable plans (Mumford, Schultz, and Van Doorn, 2001). To appraise the plans provided, three judges, all doctoral students in industrial and organizational psychology familiar with the planning literature, were asked to appraise the plans provided on a 5-point Likert scale with respect to each of the planning attribute. These 5-point rating scales reflected the extent to which a given attribute (e.g. feasibility, flexibility) was evident in the plan provided..

Prior to making their ratings of plans, judges were asked to participate in a 40-hour training program. In this training program judges were informed about the nature and significance of plans and their impact on performance. Subsequently, judges were familiarized with the operational definitions of each planning attribute and the rating scales to be applied in appraising the written plans. They were then asked to apply these rating scales in appraising a sample of plans. Judges then met to discuss their ratings

and resolve discrepancies in their evaluations of plans. Following training, the evaluations of plans with respect to these attributes evidenced adequate reliability. More specifically, the inter-rater agreement coefficients obtained for feasibility, flexibility, detail, depth, and rationality were .71, .69, .77, .67, and .67 respectively.

Furthermore, examination of the scales' interrelationships and correlations with the reference measures provide some evidence for the construct validity of these ratings. For example, feasibility of plans was strongly related to appraisals of plan rationality ($r = .74$) but less strongly related to plan detailedness ($r = .54$).

Plan Performance. Both participants' plans to the initial task (secondary school) and final task (West and Burns Furniture Company) were evaluated for overall performance, as measured by quality, originality, and elegance, based on the findings of Besemer and O'Quin (1999) and Christiaans (2002) concerning the key attributes of creative problem solutions. Initial plans were appraised for quality, originality, and elegance as well as final plans to provide a necessary control in assessing the effects of training on effective planning. In the case of both the initial and final plans, quality was defined as a complete, coherent, useful solution. Originality was defined as an unexpected, elaborate solution. Elegance was defined as a clever, refined solution where solution elements flowed well together.

To appraise the quality, originality, and elegance of initial and final plans, three judges, the same doctoral students in industrial and organizational psychology, were asked to appraise plans using a set of benchmark rating scales. Benchmark rating scales were used to appraise plan quality, originality, and elegance based on the findings of Redmond, Mumford, and Teach (1993) concerning the reliability and validity of

benchmark evaluations in appraising the creativity of problem solutions. Figure Two illustrates the benchmark rating scales developed to appraise the quality, originality, and elegance of the plans produced on this task.

To develop these benchmark rating scales, the panel of judges was familiarized with the operational definitions of quality, originality, and elegance. Subsequently, these judges were asked to rate, on a 5-point scale, the extent to which each of these attributes was evident in a sample of 20 final plans. Solutions that produced means near the high, medium, and low scale points, while evidencing relatively low standard deviations, were selected as anchors. These solutions were then abstracted to provide scale anchors.

Prior to applying these rating scales in evaluating the quality, originality, and elegance of both the experimental school and West and Burns Furniture Company plans, judges were, again, asked to participate in a 40-hour training program. In this training program judges were familiarized with the content of the benchmark rating scales for appraising quality, originality, and elegance as well as the use of exemplars, anchors, in appraising solution characteristics. Subsequently, judges applied these rating scales to a sample of plans for both the experimental school and the furniture company. Judges then met to discuss and resolve discrepancies in their ratings. Following training, the interrater agreement coefficients obtained for the quality, originality, and elegance of experimental school plans were .83, .74, and .70. The interrater agreement coefficients obtained for furniture company plans were .82, .74, and .70. Thus evaluations of quality, originality, and elegance for both experimental school and furniture company plans evidenced adequate reliability. Additionally, the pattern of

relationships observed among these scales, for example the quality and elegance of both pre plans and post plans evidenced a strong positive relationship ($\bar{r} = .46$). However, weaker, though still positive relationships were observed between plan quality and plan originality ($\bar{r} = .40$) for evaluations of both plans.

Analyses

The first analyses conducted correlated the performance variables (i.e. quality, originality, elegance) and plan attributes (feasibility, rationality, flexibility, detailedness, depth) both with each other and with the independent variables. In multiple regressions, the planning attributes were regressed on each of the three performance variables. Next, multiple analyses of covariance tests were conducted assessing the impact of manipulations on both performance variables and plan attributes. Covariates producing relationships significant at the .10 level were retained in analyses.

Results

Table 2 presents the means, standard deviations, and correlations among all relevant variables, including independent variables, performance outcome variables, plan attributes, and significant covariates. As displayed in the table, all five attributes showed positive and significant ($p \leq .01$) relationships with plan quality ($\bar{r} = .65$), originality ($\bar{r} = .44$), and elegance ($\bar{r} = .45$). In keeping with hypothesis 3 which will be further discussed later, it appears that plans adhering to the five planning attributes are related to the production of higher quality, more original, and more elegant solutions to problems calling for plan development.

Significant covariates pertaining to quality include divergent thinking ($F(1, 167) = 6.89, p = .009, \eta_p^2 = .040$), English as a primary language, ($F(1, 16) = 6.14, p = .014, \eta_p^2 = .035$), and need for cognition, ($F(1, 167) = 2.82, p = .094, \eta_p^2 = .017$). For originality, significant covariates included extraversion, ($F(1, 168) = 2.93, p = .089, \eta_p^2 = .017$) and emotional stability ($F(1, 168) = 3.57, p = .061, \eta_p^2 = .021$). Finally, elegance produced the following significant covariates: divergent thinking, ($F(1, 167) = 5.81, p = .017, \eta_p^2 = .034$), agreeableness, ($F(1, 167) = 2.82, p = .095, \eta_p^2 = .017$), and conscientiousness ($F(1, 167) = 7.92, p = .005, \eta_p^2 = .045$).

Our first hypothesis proposed that individuals presented with external competition would produce better plans than those exposed to no external competition. Overall, there was a main effect of competition on both quality ($F(1, 167) = 7.34, p = .007, \eta_p^2 = .042$) and elegance ($F(1, 167) = 16.26, p = .000, \eta_p^2 = .089$), but not for originality ($F(1, 168) = 1.81, p = .180, \eta_p^2 = .011$). Furthermore, with regard to the plan attributes, there was a main effect of competition on flexibility, ($F(1, 170) = 5.37, p = .022, \eta_p^2 = .031$), but no significant effect on feasibility, ($F(1, 168) = .001, p = .917, \eta_p^2 = .000$), detailedness, ($F(1, 165) = .369, p = .545, \eta_p^2 = .002$), depth, ($F(1, 167) = 2.72, p = .101, \eta_p^2 = .016$), or rationality ($F(1, 166) = .008, p = .928, \eta_p^2 = .000$). Thus, it appears that individuals presented with a source of external competition produce plans of higher quality and elegance, as well as more flexibility.

Our second hypothesis proposed that individuals would perform better when given a longer timeframe within which to develop and execute their plan. Timeframe produced two main effects, on flexibility ($F(1, 170) = 11.25, p = .001, \eta_p^2 = .062$), and rationality, ($F(1, 166) = .3.70, p = .056, \eta_p^2 = .022$), but no effect on feasibility, ($F(1,$

168) = 2.86, $p = .093$, $\eta_p^2 = .017$), detailedness, ($F(1, 165) = 2.32$, $p = .129$, $\eta_p^2 = .014$), or depth, ($F(1, 167) = .008$, $p = .927$, $\eta_p^2 = .000$). Similarly, timeframe had no main effect on quality, ($F(1, 167) = .780$, $p = .378$, $\eta_p^2 = .005$), originality, ($F(1, 168) = 1.49$, $p = .225$, $\eta_p^2 = .009$), or elegance, ($F(1, 167) = 1.61$, $p = .206$, $\eta_p^2 = .010$). Given the main effects of timeframe on plan flexibility and rationality, it appears as though our second hypothesis was at least partially supported.

Our third hypothesis was a bit more exploratory in nature, positing that task demands would have some sort of effect on planning performance, possibly via interaction with other influences. This appears to have been the case, with demands being something of an amplifier variable in a number of interactions. Demands played a role in three-way interactions with competition and timeframe for both elegance ($F(1, 167) = 3.67$, $p = .057$, $\eta_p^2 = .021$) and plan flexibility ($F(1, 170) = 9.94$, $p = .002$, $\eta_p^2 = .055$). Essentially, having more task demands helps planning performance when there is no external competition and sufficiently long timeframe. Otherwise, demands do not appear to influence planning performance. Analysis of covariance results for hypotheses one through three can be found in Tables 3 and 4. Interactions can be visualized on Figures 3, 4, and 5.

Our fourth, and final hypothesis proposed that planning attributes influence the quality, originality, and elegance of plans. Regression analyses showed this to be the case, as planning attributes were shown to influence quality ($R = .89$), originality ($R = .66$), and elegance ($R = .63$). Interestingly, feasibility produced a negative regression weight ($\beta = -.18$) for originality. Regression analyses can be found in Table 5.

Discussion

Before discussion the conclusions and implications of the present effort, a few limitations should be noted. This study was based on a classic experimental paradigm, featuring a low-fidelity simulation (Motowildo, Dunnette, & Carter, 1990). The transferability of our findings to the real world can thus be questioned, which is compounded by the use of an undergraduate sample. However, students have demonstrated in the past that they possess the requisite skills to address problem-solving scenarios such as the ones presented in the present study (Scott, Lonergan, & Mumford, 2005). Furthermore, our sample featured exclusively upper division business students, which likely gave them even more expertise for solving this type of management problem than is normally scene in similar studies (Moxley, Ericsson, Charness, & Krampe, 2012).

Given the low-fidelity nature of the present study, manipulations were given in a fixed order and were limited in their scope. For example, participants received a limited number of task demands to represent workload. In the real world, people are likely to experience much more (Baiioletti, Marcugini, & Milani, 1998; Laborie & Ghallab, 1995), and these demands are likely to be more varied and less predictable.

As mentioned earlier, organizations have varying degrees of timeframes for which they should, or need to plan, and this varies across levels within organizations. The present study placed every participant in the role of outside consultant, i.e. at a static level within the organization without an inherent vested interest. Results may have been different if participants were asked to assume the role of CEO of the company.

Additionally, only seven total task demands were used, and three deemed the most critical were used in the “low demands” conditions. It is possible that had a different arrangement of demands been used for these conditions, we might have seen different results. Similarly, some demands may be more likely to influence an organization to invest than other demands.

Finally, it should be noted that we used only one task drawn from a specific domain. That is, we investigated effects with regard to a business restructuring problem. The business problem-solving task used in this study has been demonstrated to assess performance, but it is only one task from a single domain. Therefore, caution should be taken when attempting to generalize our findings to other areas. Furthermore, ratings of performance variables and plan attributes were done in a continuous fashion, with raters coding a participant’s entire planning process at once, rather than independently. This was done, however, so that consistency and context would be maintained throughout the rating of each participant.

Bearing these limitations in mind, we believe the findings of this study have some notable implications for understanding the planning process and factors that influence planning performance. Past studies have examined some individual (Hammond, 1990; Carver, 2006) and situational influences of planning performance (O’Hara & Payne, 1998). However, there has been some ambiguity in the literature regarding the actual influence of the variables examined in this study.

Our findings indicate that external pressure such as competition induces investment in planning. This is seen in the main effects of more competition leading to

better plans – better solutions to problems as measured by quality, elegance, and flexibility. That is, when individuals perceive some sort of competition, they perform better. This is relatively consistent with literature investigating causal effects of competition as well as factors that influence planning. In fact, the competition-performance relationship seems to be positive across a wide variety of domains. For example, in an early study on competition and speed performance, Whittemore (1924) found that individuals complete more work when competing than when not competing. A 2012 meta-analysis by Murayama and Elliot, on the other hand found that there is no relation between competition and performance, and that competition simultaneously facilitates and undermines performance. Most of the research on competition and performance pertain to some sort of *task* performance, rather than a complex, resource-intensive cognitive process like planning (Hayes-Roth & Hayes-Roth, 1979). It is this cognitive complexity that likely explains why our results showed such strong effects for competition. Similarly, studies have shown that when environmental conditions are unstable, individuals make a greater investment in the execution of planning processes (Lowendahl, 1995). In the case of the present study, it may be that competition is presenting an unstable environment for the participant (i.e. if they do not perform well enough, someone else will get the job; job security at stake), which is congruent with Mumford, Mecca, and Watts' (2015) observation that instability increases willingness to invest, especially when the workload is high, which is seen in the three-way interactions.

Our findings with regard to timeframe and timeframe are consistent with a majority of the literature (Jacobs & Jaques, 1986; Jaques, 1986). Ultimately, a longer

timeframe is better for formulating plans that consider alternatives and can realistically be implemented. One reason planning over a longer period of time may again have to do with investment. As Jaques (1986) proposed, timeframe is crucial because it relates to the level of work or responsibility a person feels obligated to fulfill. According to this approach, longer timeframe equates to more responsibility, which in turn leads to more investment in the planning processes.

Task demands, by themselves, do not appear to hinder or facilitate successful planning. They do, however, appear to act as an amplifier when in the presence of other influencing factors. Specifically, a three-way interaction was found for elegance which indicates that task demands, as well as timeframe, simply do not matter when there is strong competition. When there is no competition, however, fewer demands produced a more elegant solution when planning over a short term, but when planning over the long term, more demands actually improves plan performance. With regard to flexibility, however, a three-way interaction shows that when competition is low, more demands is better for the short term and worse for the long term. This may be due to the fact that flexibility is concerned with developing alternatives, and it is possible that more initial, upfront plans will be formulated than long term plans.

Finally, we found that planning attributes such as feasibility, flexibility, detailedness, depth, and rationality are not only related to quality, originality, and elegance, but influence these performance variables as well. This is not surprising, given the nature and purpose of the planning attributes. Lebedev (1991) developed these constructs in order to assess the planning skills of potential managers in Soviet Russia. In a sense, what he deemed critical qualities of successful plans is in many ways an

alternate way of describing performance. So while the relationships between these planning attributes and performance variables are positive and strong, the significance of the relationships should not be overinterpreted.

There are some noteworthy implications flowing from the present effort. First, in order for people to plan, and invest in the planning process, they need to have what they deem to be a good reason. This reason should not simply be a goal, but a concrete reason. Such a reason may include external competition, facilitating a willingness to invest in the process. Without a concrete reason, individuals will not invest the cognitive resources in committing to the planning process. Second, it appears that if an individual's timeframe is limited their ability to build sound, effective plans will be diminished. Similarly, in most contexts, individuals would be better advised to plan several (2, 5, 10) years into the future, rather than the immediate short term. Finally, there is a notion that constraints, or having more requirements that need to be met, makes planning more difficult. Our data show otherwise. Our findings indicate that people will make an investment in adhering to constraints and meeting all demands, given a sufficiently long timeframe within which to execute the plan. Thus, individuals should be encouraged to think about and consider constraints when planning.

In conclusion, the present effort offers incremental observations to factors that influence organizational planning. While there is some scattered literature on individual and situational influences on planning performance, no study has looked at the specific main effects of competition and its interactions with timeframe and workload. There may be value in extending the present research to include more and different types of task demands, as well as examination of how these variables influence planning at

various organizational levels. We hope this study serves as a catalyst for more research aiming to improve the planning process.

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Appendix A: Tables

Table 1
T-tests for QOE of pre and post plans.

	Pre Plan		Post Plan		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Quality	3.00	.815	3.15	.915	2.23	.027
Originality	2.78	.753	2.37	.831	-1.58	.115
Elegance	2.69	.786	2.78	.846	1.33	.185

Note: *N* = 178.

Table 2
Means, Standard Deviations, and Intercorrelations for Relevant Variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Competition condition	.51	.50	1																	
2. Workload condition	.49	.50	.00	1																
3. Timeframe condition	.51	.50	.00	.01	1															
4. Divergent Thinking	5.57	1.67	.15*	.04	.03	1														
5. Extraversion	111.8	27.6	.11	.14	-.07	.29**	1													
6. Conscientiousness	127.8	24.6	.15*	.15*	-.02	.19*	.40**	1												
7. Emotional Stability	98.11	22.9	.15*	-.04	.01	.05	.43**	.36**	1											
8. Hypercompetitiveness	2.93	.51	-.01	.01	-.06	.20**	.18*	-.05	-.22**	1										
9. ESL	.81	.39	.18*	.02	.03	.25**	.40**	.43**	.29**	.08	1									
10. Planning Skills	7.17	3.60	.29**	.20**	.16*	.07	.01	.13	.11	-.03	.21**	1								
11. Quality	3.15	.91	.19**	.01	.08	-.10	.01	.13	.13	.02	.20**	.13	1							
12. Originality	2.37	.83	.11	.02	.11	-.04	-.04	.03	.12	.05	.13	.02	.63**	1						
13. Elegance	2.79	.85	.29**	.04	.09	-.08	.08	.21**	.20**	.02	.15*	.19*	.62**	.42**	1					
14. Feasibility	3.70	.80	.01	-.02	.13	-.08	.01	.09	.05	-.06	.19*	.09	.73**	.34**	.49**	1				
15. Flexibility	1.689	.77	.16*	.13	.24**	.06	.01	.03	-.01	-.02	.07	.05	.37**	.36**	.26**	.31**	1			
16. Detailedness	3.58	.98	-.08	-.07	.14	-.14	-.13	-.03	.07	.07	.10	.05	.74**	.60**	.39**	.54**	.32**	1		
17. Depth	2.94	1.01	.18*	.01	.03	-.12	.07	.22**	.22**	-.04	.20**	.19**	.66**	.40**	.57**	.52**	.21**	.38**	1	
18. Rationality	3.51	.82	-.02	.04	.15*	-.15	.04	.06	.03	.12	.15*	-.03	.78**	.51**	.52**	.74**	.45**	.64**	.52**	1

Note: * $p < .05$; ** $p < .01$

Table 3
Analysis of covariance results – performance variables.

	Quality			Originality			Elegance					
	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2
<u>Covariates</u>												
Divergent Thinking	6.89	1, 167	.009	.040					5.81	1, 167	.017	.034
English Language	6.14	1, 167	.014	.035								
Need for Cognition	2.82	1, 167	.094	.017								
Extraversion					2.93	1, 168	.089	.017				
Emotional Stability					3.57	1, 168	.061	.021				
Agreeableness									2.82	1, 167	.095	.017
Conscientiousness									7.92	1, 167	.005	.045
<u>Main Effects</u>												
Competition	7.34	1, 167	.007	.042	1.81	1, 168	.180	.011	16.26	1, 167	.000	.089
Workload	.024	1, 167	.877	.000	.288	1, 168	.592	.002	.055	1, 167	.816	.000
Timeframe	.780	1, 167	.378	.005	1.49	1, 168	.225	.009	1.61	1, 167	.206	.010
<u>Two-Way Interactions</u>												
Competition*Workload	.281	1, 167	.597	.002	.687	1, 168	.408	.004	.056	1, 167	.812	.000
Competition*Timeframe	.193	1, 167	.661	.001	2.11	1, 168	.148	.012	.067	1, 167	.796	.000
Workload*Timeframe	.041	1, 167	.840	.000	.184	1, 168	.668	.001	1.76	1, 167	.187	.010
<u>Three-Way Interaction</u>												
Competition*Workload*Timeframe	1.57	1, 167	.212	.009	.105	1, 168	.746	.001	3.67	1, 167	.057	.021

Note: *F* indicates F-ratio, *df* indicates degrees of freedom, *p* indicates significance level, η_p^2 indicates partial eta squared.

Table 4
Analysis of covariance results – planning attributes.

	Feasibility			Flexibility			Detail			Depth			Rationality			
	<i>F</i>	<i>df</i>	<i>p</i>	<i>F</i>	<i>df</i>	<i>p</i>	<i>F</i>	<i>df</i>	<i>p</i>	<i>F</i>	<i>df</i>	<i>p</i>	<i>F</i>	<i>df</i>	<i>p</i>	η_p^2
<u>Covariates</u>																
Divergent Thinking	3.42	1,168	.066	.020	4.78	1,165	.030	.028	7.36	1,167	.007	.042	10.94	1,166	.001	.062
English	7.63	1,168	.006	.043	6.88	1,165	.010	.040					4.58	1,166	.034	.027
Extraversion					5.37	1,165	.022	.032								
Conscientiousness									7.17	1,167	.008	.041				
Hypercompetitiveness					3.92	1,165	.049	.023					4.62	1,166	.033	.027
Need for Cognition					5.95	1,165	.016	.035					4.68	1,166	.032	.027
Planning Skills									5.84	1,167	.017	.034				
<u>Main Effects</u>																
Competition	.001	1,168	.917	.000	5.37	1,170	.022	.031	.369	1,165	.545	.002	2.72	1,167	.101	.016
Workload	.069	1,168	.793	.000	3.05	1,170	.083	.018	.958	1,165	.329	.006	.757	1,167	.385	.005
Timeframe	2.86	1,168	.093	.017	11.25	1,170	.001	.062	2.32	1,165	.129	.014	.008	1,167	.927	.000
<u>Two-Way Interactions</u>																
Competition*Workload	1.72	1,168	.192	.010	1.70	1,170	.195	.010	.123	1,165	.726	.001	1.68	1,167	.197	.010
Competition*Timeframe																
e	.035	1,168	.852	.000	9.49	1,170	.002	.033	.301	1,165	.584	.002	.026	1,167	.873	.000
Workload*Timeframe	.033	1,168	.856	.000	.015	1,170	.904	.000	.069	1,165	.793	.000	.730	1,167	.394	.004
Three-Way Interaction																
Competition*Workload*Timeframe	.599	1,168	.440	.004	9.94	1,170	.002	.055	.583	1,165	.446	.004	1.13	1,167	.290	.007

Note: *F* indicates F-ratio, *df* indicates degrees of freedom, *p* indicates significance level, η_p^2 indicates partial eta squared.

Table 5
Regressions of plan attributes on quality, originality, and elegance.

	Quality			Originality			Elegance					
	<i>B(SE)</i>	β	<i>t</i>	<i>p</i>	<i>B(SE)</i>	β	<i>t</i>	<i>p</i>	<i>B(SE)</i>	β	<i>t</i>	<i>p</i>
Feasibility	.23(.06)	.20	3.84	.00	-.19(.09)	-.18	-2.09	.04	.13(.10)	.12	1.33	.19
Flexibility	.03(.05)	.02	.60	.55	.16(.07)	.15	2.32	.02	.06(.07)	.05	.82	.41
Detail	.35(.04)	.37	8.26	.00	.39(.06)	.46	6.14	.00	.04(.07)	.05	.63	.53
Depth	.26(.04)	.28	6.85	.00	.16(.06)	.19	2.80	.01	.33(.06)	.39	5.45	.00
Rationality	.26(.07)	.23	3.89	.00	.18(.10)	.18	1.78	.08	.17(.10)	.17	1.64	.10

	Quality			Originality			Elegance								
	<i>R</i>	<i>R</i> ²	<i>R</i> _{adj} ²	<i>F</i>	<i>p</i>	<i>R</i>	<i>R</i> ²	<i>R</i> _{adj} ²	<i>F</i>	<i>p</i>	<i>R</i>	<i>R</i> ²	<i>R</i> _{adj} ²	<i>F</i>	<i>p</i>
	.89	.80	.79	136.6	.00	.66	.44	.42	26.7	.00	.63	.40	.38	22.99	.00

Note: N = 177.

Appendix B: Figures

Figure 1: Description of Business Restructuring Problem

Dallas-based West and Burns Furniture Company designed and manufactured high quality finished bedroom furniture for sale in the domestic U.S. market. West and Burns Furniture Company was established over 70 years ago by Bert West and Mort Burns. Mr. West and Mr. Burns produced their first piece of bedroom furniture in 1935 and West and Burns Furniture Company became the first incorporated furniture company in 1939. During the first year of operation, both men worked full-time jobs during the week and worked during the weekends to produce the furniture. In 1940, Bert and Mort built and sold ten pieces of furniture. By 1950, they produced and sold 100 pieces of bedroom furniture working on the furniture full-time.

The West and Burns Furniture Company became known for their fantastic customer service and producing excellent quality furniture. During the 1970s however, West and Burns could not possibly produce the furniture at a high enough rate and merged with Fantastic Furniture Makers Incorporated but kept the company name as West and Burns Furniture Company. Many of the West and Burns customers began to notice a decrease in quality when the Fantastic Furniture Company took over the company as well as a decrease in customer service.

Currently, West and Burns Furniture Company employs over 3,000 individuals. The organization structure consists of many upper and middle managers. Each line manager supervises a minimum number of employees with many separate departments. The work area is *very* cluttered and many workers have to share tools. Furthermore, in the last decade, many manufacturing companies have continued putting out new and innovative products in which the West and Burns Furniture Company failed to create. The competition has also started opening up their own furniture stores as opposed to just manufacturing the products. At the West and Burns Furniture Company after furniture is manufactured, it goes to various retail stores around the nation where it is sold to families and companies.

The owners of West and Burns, Samuel Jones, Bert West, and Mort Burns became disenchanted with the outlook of their company when the profits began to plummet. Therefore, Jones, West, and Burns decided to make a visit to the Wiley Furniture Company plant in Houston, Texas to see how they could make improvements in their own company.

The first thing they noticed was the aroma of fresh wood radiating through the manufacturing warehouse. They also noticed that the assembly line was neat and uncluttered with plenty of work area. The managers of this plant also knew the names of all the line workers who seemed happy to be there. In addition, the assembly line was extremely efficient with a minimum number of line workers and managers. Furthermore, the details of the production efficiency were amazing:

-Only 5% of this company's furniture pieces failed to pass inspection, compared with 40% to 50% at West and Burns;

-This company's productivity was in the region of 20% to 25% higher than West and Burns'.

Following this visit, Jones, West, and Burns felt that they must completely revamp their organization or bankruptcy was inevitable. The owners have brought in a number of consultants, including your team, to pitch a plan to turn around their company. The competing consulting teams are considered to be some of the best in the business. The owners will adopt the plan deemed most successful to succeed. You have been given 3 months for your plan to produce results that show you are turning around the organization. The owners are looking to hire a consultant capable of developing a plan which will produce a number of desired outcomes:

- Improved market perception
- Profitability
- Quality assurance
- Customer satisfaction
- Employee satisfaction
- Efficiency
- Workplace conditions

Figure 2: Quality, Originality, and Elegance Benchmark Rating Scales

Quality	Originality	Elegance
<p>Poor rating (1)</p> <p>"First things first, unmerge with this Fantastic Furniture crap store because your values are obviously very different between quality, efficiency, & effectiveness. I would expand the plant, decrease the number of middle managers in half. Take that half & make them front line managers that are in charge of taking care of the more personalized duties & can take better care of your customer: get customer feedback, have the ability to go buy more tools, etc. Get back to the basics of quality furniture, service, & everything else will take care of itself as long as you expand the manufacturing side & even out the managerial playing field."</p>	<p>"To improve the market perception of West & Burns the organization needs to bring back quality-oriented mindset and customer service that is likeable and personable. Employees need to be motivated to improve sales or increase productivity so incentives of commission and raises will be given out. Not only will this change how customers see the company but also increase efficiency. To make better quality products, they need to make furniture from better quality materials. This will increase profitability."</p>	<p>"First, I would make sure the assembly line was clean and uncluttered. I would pay the workers an incentive if they completed so much wood that passed inspection. I would have the line manager focus on one department. I would open up a few stores to see if our furniture would sell. If it would have. Every two weeks, I would have the line managers talk to their line to see how they are doing and to see what they are doing good and bad. I would bring in a research consultant to bring new ideas to the company for the wood market."</p>
<p>Average rating (3)</p> <p>"First thing I would do is implement a mission statement & post it somewhere everyone can see, so they know. I would have all the employees sign a handbook stating the conditions, expectations, & results of their employment. I would have someone clean up the entire space & rearrange it for better productivity. Give the employees the space they need to work. I would add incentives for the employees to improve customer satisfaction. Clean up the inside & outside of the factory, remodeling it to appeal to the customers. The workplace should have resting areas & places for employees to breathe & get away. I would recommend new materials & products to increase the quality of our products, maybe a newer type of wood. I would start paying employees more, on the basis that they improve efficiency. If employees are happier, customer satisfaction ↑, market perception ↑, & quality ↑. If % of sales in revenue ↓, but sales drastically ↑, you are still more profitable than before."</p>	<p>"I would use the idea of the Hawthorne study. I would make the workers feel special and make them feel like they are important, which will require human relations training for the managers. The managers would need to encourage a more clean work environment, hard work, and know their assigned workers. I would encourage workers by implementing promotions and bonuses for hard work on a monthly basis. I would suggest that they go back to their roots of increasing the quality and customer service in their business because that is what is going to differentiate their product from its competitors. I would also hire a marketing team that could help target higher end consumers who are willing to pay a higher price for a better product."</p>	<p>"One reason the work space may be cluttered is due to the large number of employees. The company is not utilizing their resources efficiently. The company needs to downgrade and let go of the less talented workforce. They need to revamp the assembly line to ensure proper efficiency. There needs to be one very good skill per person for the assembly line. However trading positions so that it does not get boring day in and out would be important. There needs to be usable tools in good condition in order to allow efficiency. Workers are getting paid to wait and share tools. Innovation is key and will drive success. There needs to be a competitive advantage in order to be profitable. Managers should do team building activities and get to know their people so they can care for any family concerns. People will harder if they are working for someone they like and respect."</p>
<p>Excellent rating (5)</p> <p>The first area to address is internal. Workplace conditions are paramount and largely impact worker performance. If a front line worker at the warehouse has a neat space and proper tools then he/she can better create furniture. Hiring specific task force will be necessary for many issues the company faces, but while an up front cost will initially reduce operating cash flow, long-term investments in equipment, machines, & maintenance seminars for workers will contribute to the quality of inputs going into the furniture. Employee satisfaction will result from having better tools. One thing to consider as managers is the possibility of damaging, losing tools newly purchased. A rental system could be put in place at a low cost where an ID is given to each tool & employee documents what he/she used and therefore assumes responsibility. Next, we should consider quality assurance. With improved work environment, equipment the product quality should improve as well. To ensure this top performing workers should be given recognition by allowing them to be moved up as "trainers" and given a promotion to train & conduct seminar on workshop maintenance & construction of furniture. Before products are sent out they must pass inspection. Improved market perception can be addressed by assembling a marketing team to research product, price, & promotion trends that customers respond to."</p>	<p>"1) Increase supply of tools to be more efficient than sharing. 2) develop standards for each department and make sure they are being followed. 3) create a responsible environment -> if you used the tool last, clean it up [appearance and cleanliness is a big component of employee & customer satisfaction]. 4) reward positive performance. 5) have engineers decide series of tests of method of construction to increase quality of products & implement their procedures; randomly test 1-5% of products to see if they pass tests [discovering source of errors internally will decrease # of defective products sold externally]- 6) do monthly inspections to make sure all procedures from employees to mgt are being followed. 7) incentivize customer feedback, ex: on receipt, provide phone # of customer service line or offer online survey with 10% next purchase if completed."</p>	<p>"The West & Burns Furniture company needs to have better relationships between all of their employees, first and foremost. Relationships are so important when it comes to work. Like they saw at wiley, everyone was happy and they all knew each others' names. That alone can bring the vibes of the whole store up. Customers also pick up on those kinds of things. And when there are good vibes, customers feel that and like that. They will be more willing to return if that is the case. Another thing that is very important is cleanliness. It's been proven that people work more efficiently when their surroundings are clean. When things are really messy, it stresses people out. Stress is not a good thing to have in the workplace. Everyone can sense it. Also, as weird as it may sound, smell makes a big difference to people. Like West & Burns said, the first thing they noticed was the wood aroma. People like being places that smell good. if West & Burns improved all of these things in their company it would definitely increase their profitability and help the company all together."</p>

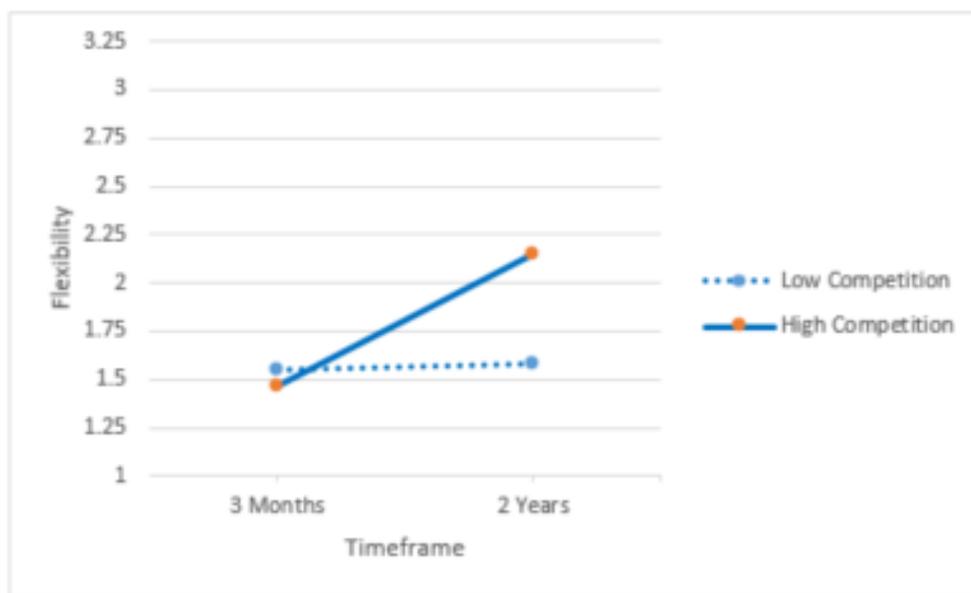


Figure 3. Two-way interaction of competition and timeframe on flexibility.

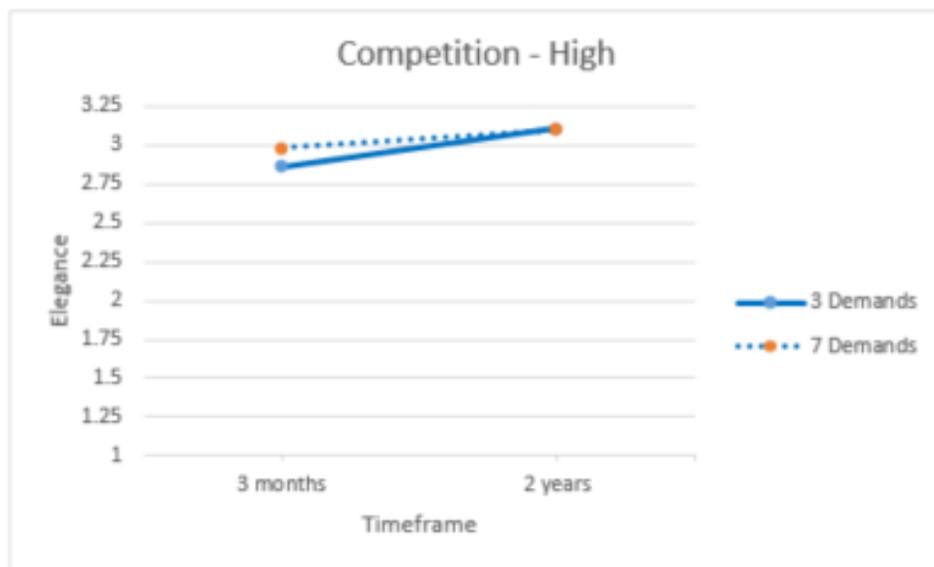
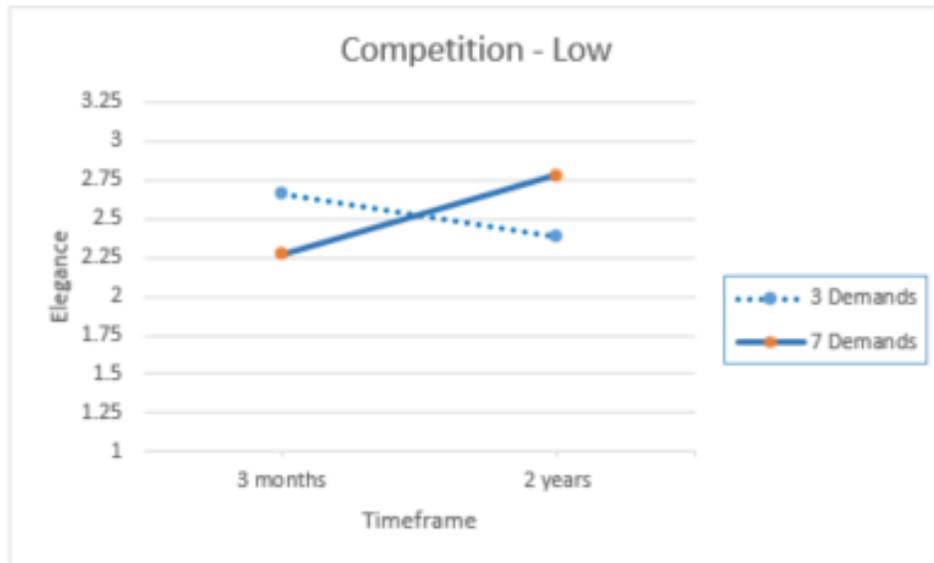


Figure 4. Three-way interaction of competition, workload, and timeframe on elegance.

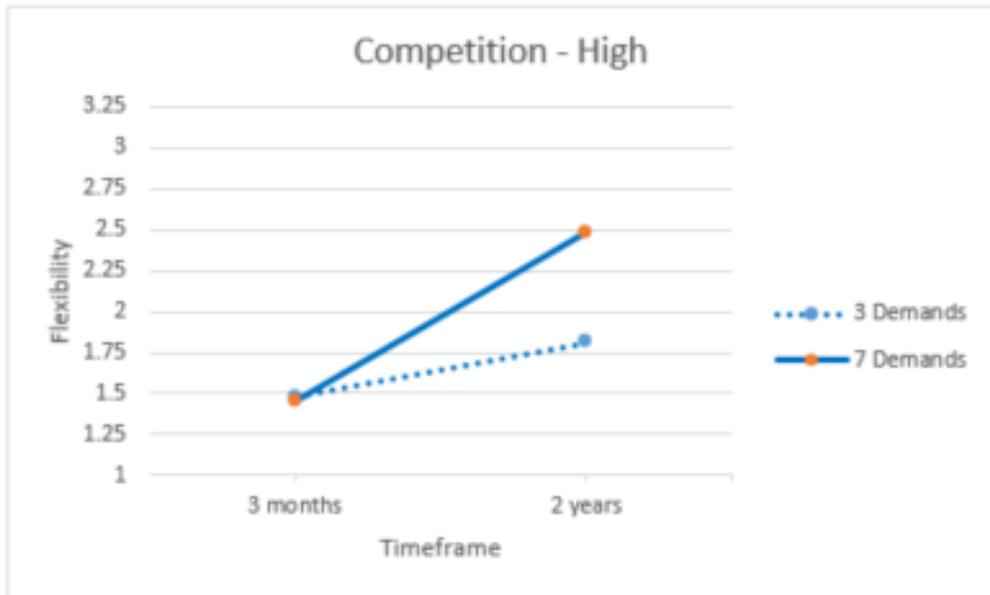
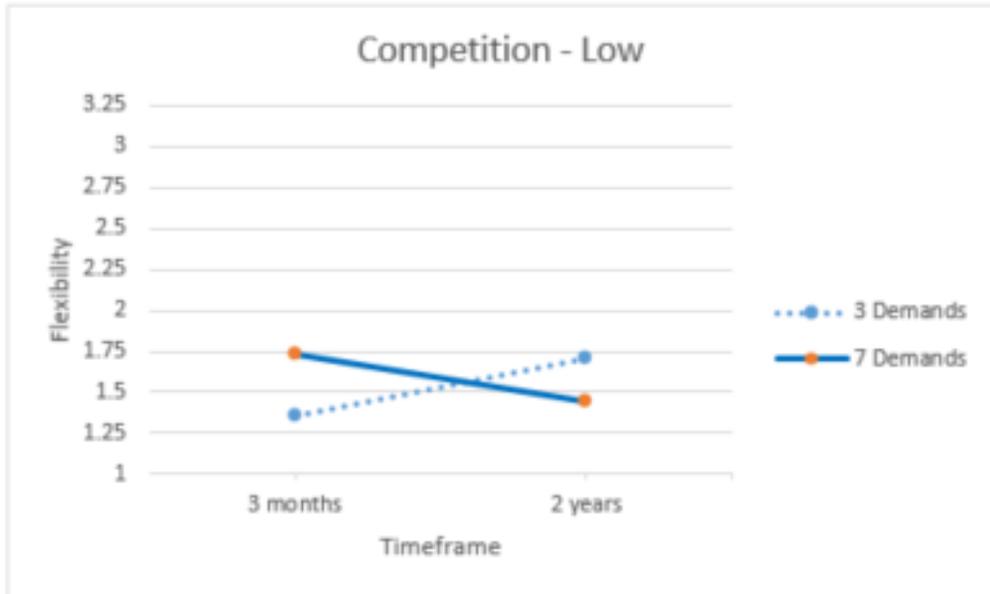


Figure 5. Three-way interaction of competition, workload, and timeframe on flexibility